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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte CAROL T. SCHEMBRI, STEVEN M. LEFKOWITZ, MICHEL G.M. PERBOST, and ROY H. KANEMOTO

Appeal 2008-2978
Application 10/037,757
Technology Center 1600

Decided:[1] February 25, 2009

Before DEMETRA J. MILLS, ERIC GRIMES, and LORA M. GREEN, *Administrative Patent Judges*.

MILLS, *Administrative Patent Judge*.

DECISION ON APPEAL

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

This is an appeal under 35 U.S.C. § 134. The Examiner has rejected the claims for lack of written description (new matter) and for obviousness. We have jurisdiction under 35 U.S.C. § 6(b). We affirm-in-part.

STATEMENT OF CASE

The following claims are representative.

1. An array assembly comprising:
(a) a plastic base layer;
(b) a continuous glass layer forward of the base layer;
(c) an array of polymers having a pattern of features on a front surface of the glass layer; and
(d) a layer between the base and glass layers that blocks at least 10% of an illuminating light incident on said front surface from reaching said plastic base layer;
wherein said array assembly is flexible.

3. An array assembly according to claim 1 wherein said layer between the base and glass layers is opaque.

4. An array assembly according to claim 1 wherein said layer between the base and glass layer is reflective.

5. An array assembly according to claim 4 wherein the reflective layer comprises metal.

6. An array assembly according to claim 4 wherein the reflective layer comprises multiple layers of dielectric materials.

7. An array assembly according to claim 4 wherein the glass layer has a thickness of 40-220 nm.

9. An array assembly according to claim 4 wherein the plastic base layer absorbs at least 10% of light at 532 nm incident on a front surface of the assembly.

12. An array assembly according to claim 1, wherein the assembly is in the form of an elongated web.

16. A method of claim 14 wherein the layer between the base layer and the glass layers comprises metal.
27. An array assembly according to claim 1, further comprising a bonding layer between said base layer and said light blocking layer.

Cited References

Giaever	US 3,979,184	Sept. 7, 1976
Chen et al.	US 2001/0051714 A1	Dec. 13, 2001
Dickinson	WO 01/18524 A2	Mar. 15, 2001

Grounds of Rejection

1. Claims 1-10, 12-20, 22-24, and 26 stand rejected under 35 U.S.C. §112, first paragraph for new matter.

2. Claims 1-6, 9-10, 12-17, 20, 22-24, and 26-28 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of Giaever or Dickinson.

3. Claims 7 and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of Giaever or Dickinson.

1. Claims 1-10, 12-20, 22-24, and 26 stand rejected under 35 U.S.C. §112, first paragraph for new matter.

ISSUE

The Examiner finds that there is no support in the Specification for a continuous glass layer. (Ans. 3.)

Appellants contend that there is support in the Specification for a continuous glass layer. (App. Br. 9.)

The issue is whether the Specification as originally filed supports a continuous glass layer, as claimed.

FINDINGS OF FACT

1. The invention relates to arrays, such as polynucleotide arrays, which are useful in diagnostic, screening, gene expression analysis, and other applications. (Spec. 1.) Reflectivity coated plastic films are well known and commercially available. (Spec. 14.) Several manufacturers have commercial capabilities for providing films coated with metal and glass layers. (Spec. 14.)

2. "The term 'continuous' is recited independent claims 1 and 14 (from which all other claims depend). The term is used in the claims to define the glass layer." (Ans. 3.)

3. The term "web" is defined in the Specification as "a long continuous piece of substrate material having a length greater than a width." (Spec. 9, ll. 7-9.)

4. Substrate material is defined in the Specification to include glass. (Spec. 15, ll. 2-17.)

5. The web includes an optional reflective layer and a transparent layer in the form of glass. (Spec. 13, ll. 30-31.)

6. Specification, page 5, ll. 11-16 and page 9, ll. 8-10 are reproduced below, respectively.

> The various aspects of the present invention can provide any one or more of the following and/or other useful benefits. For example, when the further layer is a glass layer this allows use of well known chemistries for fabricating arrays on glass substrates even though the base layer (such as a plastic layer) may not be compatible with such chemistries. The use of a reflective layer avoids optical characteristics of the base layer (such as undesirable fluorescence) interfering with reading of the array.
>
> ****
>
> A "web" references a long continuous piece of substrate material having a length greater than a width. For example, the web length to width ratio may be at least 5/1, 10/1, 50/1, 100/1, 200/1, or 500/1, or even at least 1000/1.

(Spec. 5: 10-16; Spec. 9: 8-10.)

PRINCIPLES OF LAW

The purpose of the written description requirement is to "ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor's contribution to the field of art as described in the patent specification." *Reiffin v. Microsoft Corp.*, 214 F.3d 1342, 1345 (Fed. Cir. 2000). To that end, to satisfy the written description requirement, the inventor "must also convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention.*" *Vas-Cath Inc. v. Mahurkar,* 935 F.2d 1555, 1563-64 (Fed. Cir. 1991). "One shows that one is 'in possession' of the *invention* by describing the *invention*, with all its claimed limitations . . . " (emphasis in original). *Lockwood v. American Airlines, Inc.,* 107 F.3d 1565, 1572 (Fed. Cir. 1997). We further point out that it is not necessary for the specification

to describe the claimed invention ipsis verbis; all that is required is that it reasonably convey to those skilled in the art that, as of the filing date sought, the inventor was in possession of the claimed invention. *Union Oil of California v. Atlantic Richfield Co.,* 208 F.3d 989, 997 (Fed. Cir. 2000); *Vas-Cath Inc. v. Mahurkar,* 935 F.2d at 1563-64; *In re Gosteli,* 872 F.2d 1008, 1012 (Fed. Cir. 1989); *In re Edwards,* 568 F.2d 1349, 1351-52 (CCPA 1978).

Whether a specification provides adequate written description support for a claimed invention is a question of fact. *In re Alton*, 76 F.3d 1168, 1171-72 (Fed. Cir. 1996).

ANALYSIS

Appellants argue that the Specification on pages 5 and 9 define glass substrates and webs made of substrate material. (App. Br. 10.) Appellants contend that when these passages are taken in combination and as read by one of ordinary skill in the art they support a continuous glass layer. (*Id.*) The Appellants direct attention of the Office Specification pages 5, ll. 11-16 and page 9, ll. 8-10 (reproduced above). (App. Br. 9; Reply Br. 9.)

The Examiner argues that the passage at page 9, lines 8-10 of the Specification states that

> a "web references a long continuous piece of substrate material having a length greater than a width." The passage defines a web substrate material. In other words, a web is one example and/or one component of the substrate. It is noted that the passage does not define the substrate as a web, nor does the passage define the substrate as elongated. In contrast, the passage merely defines a "web".

(Ans. 3.)

The Examiner further argues that

> As defined by the specification, the glass layer illustrated in Fig. 3 is a portion of the assembly illustrated in Fig. 1. Figure 1 illustrates multiple, individual, discontinuous arrays (12). While Fig. 3 illustrates a "portion" of the assembly having the glass layer. Taken together, figures 1-3 do not illustrate a continuous glass layer as claimed.
>
> The specification teaches a "web" as a continuous piece of substrate (page 9, lines 8-10) and teaches a preferred embodiment comprising a base layer (e.g. plastic) and a further layer (e.g. glass, page 4, lines 19-22). The specification does not teach (or illustrate) a glass layer is continuous; the specification does not teach (or illustrate) a glass layer covers the entire substrate; and the specification does not define the term "continuous" so as to define the illustrated glass layer as continuous. Therefore, the recitation of "continuous glass layer" is deemed new matter.

(Ans. 4.)

The Examiner argues that

> The teaching beginning on page 4, line 19 provides a preferred embodiment of the "assembly" i.e. "assembly has a base layer, a further layer of another material (such as a glass layer) forward of the base layer". The passage defines a physical relationship between the base layer and further (e.g. glass) layer. The passage does not define the further layer as continuous and does not teach that either of the two layers are continuous layers.

(*Id.* at 3.)

To satisfy the written description requirement, the inventor must convey with reasonable clarity to those skilled in the art that he or she was in possession of the invention. *Vas-Cath Inc. v. Mahurkar,* 935 F.2d at 1563-

64. In our view, when the Specification is reviewed as a whole, we agree with Appellants that one of ordinary skill in the art reviewing the Specification as a whole would understand that the web may be made of a continuous glass layer. (FF 2-5, 6.) In our opinion the Examiner has failed to read the above passages from the Specification, in view of the teachings of the Specification as a whole. We agree with Appellants that the Specification's description of a web, which includes a transparent glass layer, as a continuous piece of substrate material, which may be glass, is support for a continuous glass layer. (FF 2-6.)

CONCLUSION OF LAW AND DECISION

In view of the above, the Specification as originally filed supports a continuous glass layer, as claimed. The new matter rejection is reversed.

2. Claims 1-6, 9-10, 12-17, 20, 22-24, and 26-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen in view of Giaever or Dickinson.

ISSUE

The issue is whether the light blocking property recited in claim 1 is inherent in Chen's metal layer, and whether Appellants have provided evidence that the light blocking property is not inherent in Chen's metal layer.

FINDINGS OF FACT

7.

> Regarding Claim 1, Chen et al disclose a flexible array assembly (Abstract) comprising a plastic base layer a glass layer forward of the base plate and a metallic layer sandwiched between the glass and plastic layers (¶66), and an array of polymers having a pattern of features on a front (upper) surface of the glass (¶57).

(Ans. 5.)

8. "Chen et al do not specifically teach the light-blocking property of the metallic layer." (*Id.*)

9. Chen teaches that a glass (silica) or plastic substrate may be coated with a metallic layer which may be of gold, silver or titanium. (Chen, 6: ¶ 0066, 7: ¶ 0074.) The coating may be a hermetic coating. (Chen 7: ¶ 0074.) The metallic material protects and/or strengthens the substrate. (Chen 7: ¶ 0076.) The substrate may contain a metallic element such as a metal layer which forms an electrode. (Chen 7: ¶ 00119.) In some embodiments the thickness of the substrate can be up to 500 micrometers. (Chen 7: ¶ 0078.)

10. The Specification, page 13, ll. 30-32 indicates that the reflective metal layer may be of aluminum, silver, gold, platinum, chrome or other suitable metal. The reflective layer may have a thickness of less than 50 nm, or even less than 20, 10, 5 or 1 nm but more than 0.1 or 0.5 nm. (Spec. 14 (emphasis added).)

11. Knowledge that "intervening metallic layers having light blocking properties were well known and routinely practiced in the art at the time the claimed invention was made as taught by Giaever and Dickenson [sic]." (Ans. 5.)

12. The probe carrier of Chen includes a glass or plastic substrate, a metal layer, another silica layer and a probe layer. (Chen, ¶ 0019, 0066, 0074, 0076.)

13. Appellants argue the claims of this rejection in the following groups: Group I: Claims 1-2, 10, 13-14, 20, 23 and 24; Group II: Claims 3 and 26; Group III: Claims 4 and 15, Group IV: Claims 5 and 16; Group V: Claims 6 and 17; Group VI: Claim 9; Group VII: Claims 12 and 22; and Group VIII: Claims 27 and 28. (Reply Br. 10.)

PRINCIPLES OF LAW

"In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness. Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant." *In re Rijckaert*, 9 F.3d 1531, 1532 (Fed. Cir. 1993) (citations omitted). In order to determine whether a prima facie case of obviousness has been established, we consider the factors set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1996): (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the relevant art; and (4) objective evidence of nonobviousness, if present. "[A]nticipation is the epitome of obviousness." *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983).

"After a *prima facie* case of obviousness has been established, the burden of going forward shifts to the applicant. Rebuttal is merely 'a showing of facts supporting the opposite conclusion,' and may relate to any

of the *Graham* factors including the so-called secondary considerations." *In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984) (citations omitted).

In re Best, 562 F.2d 1252, 1255 (CCPA 1977) held that "the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product . . . . Whether the rejection is based on 'inherency' under 35 U.S.C. § 102, on 'prima facie obviousness' under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products."

ANALYSIS

Claims 1, 2, 10, 13, 14, 20, 23 and 24

We select claim 1 as representative of this group in the rejection before us since Appellants have not separately argued the other claims. 37 C.F.R. 41.37(c)(1)(vii).

Appellants contend that "Giaever teaches a structure that includes a layer of metal globules over a dielectric layer." (Reply Br. 14.) Appellants argue that it is the interaction of the second layer of metal globules with the other layers that provides for the beneficial property in Giaever and not the mere presence of the first metal surface. In view of this, Appellants contend that one of skill in the art would not be motivated to modify Chen in view of Giaever in the manner suggested, since Chen does not include metal globules. (Reply Br. 15.)

We do not find that Appellants arguments are on point to the issue before us. Thus, we are not persuaded by Appellants' argument.

The Examiner argues that Chen teaches the structure claimed, including the metallic layer, but fails to teach the light blocking property of the metallic layer. (FF 7, 8.) The probe carrier of Chen includes a glass or plastic substrate, a metal layer, another silica layer and a probe layer. (Chen, ¶ 0019, 0066, 0074, 0076, FF 12.) The probe carrier or array of Chen includes a metal layer which may be silver, gold or titanium. (FF 9.)

The Specification, page 12, ll. 30-32 indicates that the reflective metal layer may be of aluminum, silver, gold, platinum, chrome or other suitable metal. (FF 10.) Because the reflective layer of the invention may be gold or silver and the metal layer of Chen may also be of gold or silver, the metal layer of Chen would reasonably appear to inherently possess the claimed light blocking property. According to the Specification, the reflective metal layer can be as thin as 0.1 or 0.5 nm. (FF 10.) Chen describes that its metal layer protects and/or strengthens the substrate, and that the overall thickness can be as much as 500 micrometers. (FF 9.) Based on the overall size of Chen's product, it is reasonable to expect that the metal layer between the plastic base and glass (silicon) layers would have a thickness of greater than 0.1 to 0.5 nm, which, according to the Specification, is thick enough to provide the light-blocking property recited in claim 1.

Thus, we find that the Examiner has established a prima facie case of anticipation based on inherency. "[A]nticipation is the epitome of obviousness." *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983).

Appellants have come forth with no evidence showing that a metal layer that protects and strengthens the substrate and made of gold or silver, as in Chen, would not have at least a thickness of at least 0.1 nm. Thus,

Appellants have provided no evidence to show that Chen does not inherently disclose the light blocking property claimed.

In sum, Appellants have failed to provide evidence that the metal layer of Chen which is the same or substantially the same as that claimed (as the metal layer of Chen can be of silver and gold (FF 9) and the metal layer taught by the Specification can be of silver and gold (FF 10)), would not block "at least 10% of an illuminating light incident on said front surface from reaching said plastic base layer," as recited in claim 1. Appellants have failed to provide evidence that a metallic material that protects and/or strengthens the substrate, which may form an electrode (FF 9) as disclosed in Chen would not be of an appropriate thickness to provide the claimed light blocking properties. Inherent anticipation being the epitome of obviousness, the obviousness rejection is affirmed.

CONCLUSION OF LAW

Appellants have not provided evidence that the light blocking property is not inherent in Chen's metal layer.

The obviousness rejection of claim 1 is affirmed. Claims 2, 10, 13, 14, 20, 23, and 24 fall with claim 1.

Claims 3 and 26

We select claims 3 as representative of this claim grouping.

ISSUE

Appellants contend that Chen does not teach or suggest an opaque layer between the base and glass layers. (Reply Br. 18.)

The Examiner finds that Chen discloses an array assembly comprising an opaque metallic layer between the base and glass layers. (Chen, ¶ 66, lines 9-16.) (Ans. 6.)

The issue is: does Chen disclose an opaque layer between the base and glass layers?

FINDINGS OF FACT

14. The term "opaque" is defined as "[i]mpenetrable by light, neither transparent or translucent." http://www.thefreedictionary.com/opaque.

15. Chen does not teach the light blocking properties of the metallic layer. (Ans. 5.)

16. The Specification states that a non-reflective opaque layer may reflect less than 95%, 90%, 80% or 50% (or even less than 10%) of the illuminating light. (Spec. 15, ll. 23-28.)

17. Giaever discloses a diagnostic device having a nontransparent (opaque) metallic layer between the base and glass layers (Giaever, col. 2, ll. 16-35 and 51-57 (Fig. 1). (Ans. 5.) In Giaever, the first metal layer is non-transparent and can be applied over a plastic substrate. (Giaever, col. 3, ll. 22-31.)

18. Giaever teaches that suitable metals for the first metallic layer include titanium. (Giaever, col. 3, ll. 22-25.)

ANALYSIS

Appellants argue with respect to Claims 3 and 26, that none of the cited references teach or suggest an opaque layer between the base and glass layers. (Reply Br. 18.)

We are not persuaded by Appellants' argument. The Specification states that a non-reflective opaque layer may reflect less than 95%, 90%, 80% or 50% (or even less than 10%) of the illuminating light. (Spec. 15, ll. 23-28.) Thus the claim encompasses varying levels of opacity.

Chen teaches a metallic coating that can be titanium. (FF 9.) Because Chen also teaches a metallic layer of titanium (which Giaever also indicates is non-transparent (FF 18)), we find that Appellants have failed to provide rebuttal evidence that the metal (e.g., titanium) layer of the biological assay device of Chen is not opaque.

CONCLUSION OF LAW

Appellants have failed to provide rebuttal evidence that the metal (e.g., titanium) layer of the biological assay device of Chen is not opaque.

The rejection of claim 3 is affirmed.

Claims 4, 5, 15 and 16.

Appellants contend that the cited references do not teach that the metallic layer is reflective. (App. Br. 16.)

The Examiner finds that the metallic layer of Chen is reflective. (Ans. 6.)

The issue is do the cited references in combination teach that the layer between the base layer and glass layer is reflective metal?

FINDINGS OF FACT

19. "Chen et al disclose the array assembly further comprising a reflective (metallic) layer between the base and glass layers (¶66, lines 9-15)." (Ans. 6.)

20. "Dickinson defines an array composition wherein the metallic layer as reflective (page 11, lines 18-25)." (*Id.*)

ANALYSIS

Appellants contend that the cited references do not teach a reflective metal layer. (App. Br. 17.) Appellants further argue that Dickinson does not teach a continuous glass surface layer because it teaches the use of beads rather than a continuous glass layer. (App. Br. 17.)

We are not persuaded by Appellants' arguments. Chen teaches that its metal layer can be gold or silver (FF 9). The instant Specification teaches that a reflective metal layer can be made of gold or silver (FF10). Therefore, we conclude that the Examiner has provided sufficient evidence that the cited references teach a reflective metallic layer.

As we have found herein, it is Chen and Giaever that teach a continuous glass layer. (FF 7.) Appellants have failed to show error in the Examiner's prima facie case, or to rebut it.

CONCLUSION OF LAW

The cited references teach a reflective metallic layer. The rejection of claims 4 is affirmed. Claims 5, 15, and 16 fall with claim 4.

Claims 6 and 17

ISSUE

Appellants argue that the cited references do not disclose multiple layers of dielectric materials. (App. Br. 18.)

The Examiner contends that Chen discloses an array wherein the reflective layer comprises a dielectric material. (Ans. 12.)

The issue is: do the combined references disclose multiple layers of dielectric material?

ANALYSIS

We do not find that the Examiner has pointed to any evidence of record which evidences that *multiple* dielectric layers are taught in or suggested by the cited prior art. Although Chen may disclose a single layer of dielectric material, we find no teaching or evidence of multiple dielectric layers as claimed.

CONCLUSION OF LAW

The combined references do not disclose multiple layers of dielectric material. The rejection of claims 6 and 17 is reversed.

Claim 9

ISSUE

Appellants assert that not all plastics absorb at least 10% of light at 532 nm incident on a front surface of the assembly. (App. Br. 19.)

The Examiner argues that claim 9 does not further limit the structures of claim 4 and that Chen teaches the structure of claim 4, a plastic base. (Ans. 6.)

The issue is: does Chen teach a plastic base layer that absorbs at least 10% of light at 532 nm incident on a front surface of the assembly?

FINDINGS OF FACT

21. "Chen et al disclose the array assembly further comprising a reflective (metallic) layer between the base and glass layers (¶66, lines 9-15) and Dickinson defines the metallic layer as reflective (page 11, lines 18-25)." (Ans. 6.)

22. According to Chen, the substrate may be a plastic selected from the group consisting of polyimide and polytetrafluoroethylene. (2: ¶ 19).

23. The Specification teaches that the base layer may be a plastic which includes polyimide and any of the fluorocarbon polymers. (Spec. 13, ll. 5-9.)

24. The Specification teaches that the base layer will typically have a thickness between 1 μm and 500 μm. (Spec. 13: 27-29.)

25. The claimed assembly is defined as having a base layer that absorbs at least 10% of light at 532 nm.

ANALYSIS

Both the Specification and Chen teach that the base layer may be comprised of polyimide or a fluorocarbon polymer, which includes polytetrafluoroethylene. (FF 21, 22.) While Chen does not suggest the amount of light transmission at a specific wavelength, Chen does disclose

the same or substantially the same material for the base layer. In addition, Chen discloses that the substrate can have a thickness of up to 500 μm (FF 9), which is the same maximum thickness indicated in the Specification for the base layer. Under the principles of *In re Best*, discussed herein, the burden of proof shifts to Appellants to prove that the polyimide and fluorocarbon polymers of Chen do not possess the claimed light transmission properties. This, Appellants have not done.

CONCLUSION OF LAW

We find that Chen teaches plastics which are the same or substantially the same as those claimed and Appellants have not met the burden of proving that the plastic base layer substances of Chen do not absorb at least 10% of light at 532 nm incident on a front surface of the assembly. The rejection of claim 9 is affirmed.

Claims 12 and 22

ISSUE

Appellants contend that "Chen does not teach or suggest an assembly that is in the form of an elongated web." (App. Br. 21.)

The Examiner finds that Chen teaches an elongated web. (Ans. 7.)

The issue is: does Chen teach an elongated web?

FINDINGS OF FACT

26. The Specification defines a web as "a long continuous piece of substrate material having a length greater than a width." (Spec. 9, ll. 8-10.)

27. Chen discloses an assembly in the form of an elongated web. (¶77; Ans. 7.)

ANALYSIS

The Specification defines a web as "a long continuous piece of substrate material having a length greater than a width." (FF 3, 26.) The evidence of record, Chen, discloses a probe carrier which is flexible and in the form of an elongated web. (FF 27, Ans. 8.) Since the elongated web of Chen has a length greater than the width, Chen discloses an elongated web, consistent with the definition in the Specification.

Appellants have failed to present argument or evidence to rebut the facts set forth by the Examiner.

CONCLUSION OF LAW

Chen teaches an elongated web assembly and the rejection of claim 12 is affirmed.

Claims 27 and 28

ISSUE

Appellants argue that the cited references in combination fail to teach an assembly which includes a bonding layer between the base layer and light blocking layer. (App. Br. 21-22.)

The Examiner argues that Chen discloses an

> assembly wherein a metallic layer sandwiched between the glass and plastic layers (¶ 66) but they are silent regarding a bonding layer between the metal and plastic. However, Giaever teach a similarly layered assembly wherein they teach that the

> metal layer must remain "firmly adhered to the substrate" with change of temperature (Column 3, lines 24-29). This clearly suggests that the metal be bonded to the base layer. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply an adhering layer between the metal and base layers of Chen et al. One of ordinary skill in the art would have been motivated to do so based on the teaching of Giaever and for the expected benefit of keeping the metal "firmly adhered to the substrate" as taught by Giaever (Column 3, lines 24-29).

(Ans. 9.)

The issue is does the combination of cited references teach or suggest an assembly which includes a bonding layer between the base layer and light blocking layer?

PRINCIPLES OF LAW

When determining whether a claim is obvious, an examiner must make "a searching comparison of the claimed invention – *including all its limitations* – with the teaching of the prior art." *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis added). Thus, "obviousness requires a suggestion of all limitations in a claim." *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)).

ANALYSIS

We do not find that the Examiner has provided sufficient evidence to support a prima facie case of obviousness. The Examiner has failed to provide evidence that any of the products in the cited references teach a

bonding layer between the base layer and the light blocking layer. We acknowledge Giaever teaches a layered assembly wherein they teach that the metal layer must remain "firmly adhered to the substrate" with change of temperature, however we do not find that Giaever discloses an additional bonding layer, as claimed.

CONCLUSION OF LAW

The Examiner has failed to provide evidence that the cited references teach or suggest a bonding layer between the base layer and the light blocking layer. This rejection of claims 27 and 28 is reversed.

3. Claims 7 and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of Giaever or Dickinson (Ans. 14).

ISSUE

Appellants contend that in the optical array field, optical detection is a functional element and focal length, interference, diffraction angle and reflection are crucial to the methods practiced and that dimensional parameters are not mere optimization. (Reply Br. 13.)

The Examiner contends that the glass layer thickness of Chen may be optimized by one of ordinary skill in the art. (Ans. 15.)

The issue is: has the Examiner shown that each claimed element is taught in or suggested by the prior art?

FINDINGS OF FACT

28. Chen "disclose[s] an array assembly and method of making the assembly comprising a plastic base layer a glass layer forward of the base plate (¶ 66), and an array of polymers having a pattern of features on a front (upper) surface of the glass (¶ 57) wherein the substrate has a thickness (diameter) of 125μm and teaches that other diameters are available (¶ 68)." (Ans. 14.)

29. Chen does not teach an array assembly wherein the glass layer has a thickness of 40-220 nm. (Ans. 14.)

PRINCIPLES OF LAW

When determining whether a claim is obvious, an examiner must make "a searching comparison of the claimed invention – *including all its limitations* – with the teaching of the prior art." *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis added). Thus, "obviousness requires a suggestion of all limitations in a claim." *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)).

> In *In re Aller*, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955), the court set out the rule that the discovery of an optimum value of a variable in a known process is normally obvious. We have found exceptions to this rule in cases where the results of optimizing a variable, which was known to be result effective, were unexpectedly good. . . . [A case] in which the parameter optimized was not recognized to be a result-effective variable, is another exception.

In re Antonie, 559 F.2d 618, 620 (CCPA 1977).

ANALYSIS

The substrate of Chen may be glass (FF 32), and the substrate may have a diameter of 125μm (FF 31). However, Chen's substrate is the base layer, not the glass layer recited in claim 7. We do not find that Chen teaches an array assembly wherein the glass layer has a thickness of 40-220 nm.

We are not persuaded by the Examiner's argument that the claimed thickness does not distinguish the instant invention over the glass layer of Chen because one of ordinary skill in the art would have expected the glass layers to perform equally or that "it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the glass thickness of Chen et al based on their suggestion to do so . . . for the obvious benefits of optimizing the thickness to thereby optimize results" (Ans. 15). The Examiner has not pointed to any evidence of record to support a conclusion that the thickness of the glass layer was recognized as a result-effective variable or that the size range recited in claims 7 and 18 would have been within the range of thicknesses that would have been considered obvious.

We find no evidence of record presented by the Examiner that it would have been obvious to one of ordinary skill in the art to alter the size of the glass layer of Chen in a way that would arrive at the claimed substrate size.

The obviousness rejection of claims 7 and 18 is reversed.

SUMMARY

The new matter rejection is reversed. The rejections of the claims for obviousness are affirmed, except for claims 6, 7, 17, 18, 27, and 28, which are reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

cdc

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